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SECURITY OF AWACS AND AIM-9L TECHNOLOGY

The sale of the AWACS and AIM-91 missiles to Saudi Arabia does not constitute a high risk of loss of sensitive technology.

The AWACS is a 1960s design system; the radar (pulse doppler) is textbook technology and the computer is commercially available. The Soviets have most assuredly measured all of the external observables of the AWACS, including antenna pattern, frequencies, pulse repetition rates, modes, output power, bandwidths, and azimuth/elevation slew rates. What has not been discovered by the Soviets is the detection log and methods buried in the software of the radar data correlation computer. This software is the heart of the system.

The radar data correlation computer, manufactured by Westinghouse, is programmed in a "machine language" unique to AWACS only. The source code and algorithms that made this program are not required by the user, and consequently are not delivered to the USAF: nor will they be delivered to NATO or Saudi Arabia. What is delivered to the user is the magnetic tape program for loading the computer. Experts differ on how long it would take a team of expert engineers to decipher these tapes and reconstruct the logic, but they agree it would require a massive effort, taking up to several years. However, unscrambling the system software in this fashion could be of very limited benefit since within days we could modify the logic parameters of the software and reduce any probability of Soviet exploitation.

Even if the computer language and software were deciphered, it would not help the Soviets exploit the surveillance radar. Soviet doctrine (and jamming reliability) depends very much on the use of noise jamming. Knowledge of the software logic is not essential to this objective. Only if the Soviets were using narrow band "logic exploitation" jamming would knowledge of the software help, but with logic exploitation the adversary has no way of knowing whether or not his jamming is being effective. Because of this total lack of jamming reliability, logic exploitation of a surveillance radar would almost certainly be avoided.

The new Soviet AWACS-type aircraft, a derivative of the CANDID transport aircraft, has been under development for some time and is expected to have a capability similar to our own AWACS. This Soviet system should be operational quite soon.

The Saudis recognize that we are offering to sell them advanced equipment which incorporates sophisticated technology. They therefore have agreed to security arrangements that go far beyond normal procedures to safeguard this technology. In addition to

the specific security clauses of the contract between the US and Saudi Governments (the Letter of Offer and Acceptance, or LOA), there is a General Security of Information Agreement being developed which provides specific procedures for access to classified information, periodic inspections, and physical security, as well as assurance that the Saudi Arabian Government will provide a degree of protection to any classified information equivalent to the protection afforded it by the US Government.

While compromise of the AIM-9L missile technology could have a negative impact, the Soviets are believed to have a missile in development that will give them an AIM-9L-class capability in the near future. The sale of the AIM-9L to Saudi Arabia will have the same stringent safeguards as AWACS to protect the security of the technology. The AIM-9L has already been released to NATO, Japan, Australia and Israel.